



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/560,733	12/15/2005	Takamitsu Asanuma	126277	3716

25944	7590	05/29/2008
OLIFF & BERRIDGE, PLC		
P.O. BOX 320850		
ALEXANDRIA, VA 22320-4850		

EXAMINER	
EDWARDS, LOREN C	

ART UNIT	PAPER NUMBER
3748	57901

MAIL DATE	DELIVERY MODE
05/29/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/560,733	Applicant(s) ASANUMA, TAKAMITSU	
	Examiner LOREN C. EDWARDS	Art Unit 3748	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 March 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-9 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 December 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. An Applicant's Amendment filed on 3/27/08 has been entered. Overall, claims 1-9 are pending in the application.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless —

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

3. Claims 1, and 3- 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Yamaguchi et al. (U.S. 6,922,988). Yamaguchi discloses an exhaust gas control apparatus for an internal combustion engine, comprising: an NOx storage reduction catalyst (Fig. 1, No. 20) which is provided in an exhaust passage for an internal combustion engine; a detection device (Fig. 1, Nos. 11 and 22) which detects a total concentration of sulfur oxide (Col. 15, Lines 4-22) and hydrogen sulfide (Col. 15, Lines 31-47) in exhaust gas that has passed through the NOx storage reduction catalyst, and

a concentration of the sulfur oxide in the exhaust gas (Col. 15, Lines 4-22); and a poisoning recovery control device (Fig. 3) which performs a poisoning recovery process that controls an operating state of the internal combustion engine such that the sulfur oxide is released from the NOx storage reduction catalyst, wherein when a concentration of the hydrogen sulfide obtained based on the total concentration and the concentration of the sulfur oxide that are detected by the detection device during the poisoning recovery process exceeds a permissible limit (Fig. 3, Steps 101 and 102), the poisoning recovery control device controls the operating state of the internal combustion engine such that the sulfur oxide is released from the NOx storage reduction catalyst, an amount of the released sulfur oxide is in a predetermined range, and the concentration of the hydrogen sulfide is reduced (Col. 15, Line 48 – col. 16, Line 11).

4. The applied reference has a common Assignee with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention “by another,” or by an appropriate showing under 37 CFR 1.131.

5. With regards to claim 3, Yamaguchi discloses the apparatus of claim 1, as described above, and further wherein the poisoning recovery control device controls the operating state of the internal combustion engine such that the concentration of the hydrogen sulfide is reduced (Col. 16, Lines 12-22), by performing at least one of a process of increasing an exhaust gas air-fuel ratio in a rich air-fuel ratio range (Col. 15,

Line 48 – col. 16, Line 11), and a process of decreasing a temperature of the NOx storage reduction catalyst in a temperature range in which the sulfur oxide is released (Col. 15, Line 48 – col. 16, Line 11).

6. With regards to claim 4, Yamaguchi discloses the apparatus of claim 3, as described above, and further wherein the poisoning recovery control device increases the exhaust gas air-fuel ratio by performing at least one of a process of increasing an amount of intake air, a process of decreasing and EGR amount, and a process of decreasing an amount of fuel supplied to a portion upstream of the NOx storage reduction catalyst (Col. 14, Lines 11-33; Fig. 3, Step 103).

7. With regards to claim 5, Yamaguchi discloses the apparatus of claims 1, as described above, and further wherein when the concentration of the hydrogen sulfide is lower than the permissible limit (Fig. 3 - No), the poisoning recovery control device controls the operating state of the internal combustion engine such that the amount of the sulfur oxide released from the NOx reduction catalyst is increased (Fig. 3, Step 104; Col. 15, Line 65 - Col. 16, Line 11).

8. With regards to claim 6, Yamaguchi discloses the apparatus of claim 5, as described above, and further wherein the poisoning recovery control device controls the operating state of the internal combustion engine such that the amount of the released sulfur oxide is increased, by performing at least one of a process of decreasing an exhaust gas air-fuel ratio (Col. 15, Line 65 - Col. 16, Line 6), and a process of increasing a temperature of the NOx storage reduction catalyst.

Art Unit: 3748

9. With regards to claim 7, Yamaguchi discloses the apparatus of claim 6, as described above, and further wherein the poisoning recovery control device decreases the exhaust gas air-fuel ratio by performing at least one of a process of decreasing an amount of intake air, a process of increasing an EGR amount, and a process of increasing an amount of fuel supplied to a portion upstream of the NO_x storage reduction catalyst (Col. 15, Line 65 - Col. 16, Line 6).

10. With regards to claim 8, Yamaguchi discloses the apparatus of claim 1, as described above, and further wherein when the concentration of the sulfur oxide detected by the detection device has a decreased to a predetermined lower limit value (Fig. 3, Step 101 - yes), the poisoning recovery control device controls the operating state of the internal combustion engine such that the amount of the released sulfur oxide is increased (Col. 15, Line 65 - Col. 16, Line 6).

11. With regards to claim 9, Yamaguchi discloses an exhaust gas control method for an internal combustion engine, characterized by comprising: performing a poisoning recovery process (Fig. 3) that controls an operating state of an internal combustion engine such that sulfur oxide is released from a NO_x storage reduction catalyst provided in an exhaust passage for the internal combustion engine, detecting a total concentration of sulfur oxide (Col. 15, Lines 4-22) and hydrogen sulfide (Col. 15, Lines 31-47) in exhaust gas that has passed through the NO_x storage reduction catalyst during the poisoning recovery process (Fig. 3; Steps 101 and 102); detecting a concentration of the sulfur oxide in the exhaust gas that has passed through the NO_x storage reduction catalyst during the poisoning recovery process (Fig. 3; Step 101);

calculating a concentration of the hydrogen sulfide based on the total concentration and the concentration of the sulfur oxide that are detected (Fig. 3; Step 102); and controlling at least one of exhaust gas that flows into the NO_x storage reduction catalyst and a state of the NO_x storage reduction catalyst such that the sulfur oxide is released from the NO_x storage reduction catalyst, an amount of the released sulfur oxide is in a predetermined range, and the concentration of the hydrogen sulfide is reduced when the concentration of the hydrogen sulfide exceeds a permissible limit (Fig. 3; Col. 15, Line 48 - Col. 16, Line 22).

Allowable Subject Matter

12. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

13. Applicant's arguments filed 3/27/08 have been fully considered but they are not persuasive. Applicant has argued that Yamaguchi fails to disclose detecting the SO_x concentration in the exhaust. The examiner respectfully disagrees and argues that Yamaguchi detects the SO_x concentration using the NO_x sensor (Fig. 1, No. 22) as evidenced in Column 15, in lines 4-22.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to LOREN C. EDWARDS whose telephone number is (571)272-2756. The examiner can normally be reached on M-TH 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Denion can be reached on (571) 272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Loren Edwards/

(571) 272-2756


THOMAS DENION
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 3700